

Remarks

Status of the Subject Application

Claims 1, 2, 4-6, 8-11, 13-24, 26, 27, 30-47, 49-55, and 57-61 are pending in the Subject Application and stand rejected under 35 U.S.C. §103 as being unpatentable over United States Patent Application Publication No. 2002/0062482 to Bolle et al. (hereinafter “Bolle”) in view of United States Patent Application Publication No. 2005/0146605 to Lipton et al. (hereinafter “Lipton”).

Claim Amendments

The claims have been amended herein in the following general ways:

- The term “non image feature data” or “non image feature stream” have been replaced with “feature stream.”
- The “image acquisition device” or “encoder” has been specified as performing “low-level feature extraction” on the image data to extract “feature stream.”
- Independent method Claim 1 and system Claim 15 now recite at least part of the following use of an image acquisition device installed in the field which includes a processor and an encoder and is connectable to a data network to be operable and communicate with a server. The processor converts the image captured to digital format and the local encoder applies low-level feature extraction to the digital format of the image stream. The low-level feature extraction is selectively applied to generate a feature stream from the image stream. The feature stream is transmitted via the data network to the remote server for high-level processing and event detection.

- Independent method Claim 32 now recites, in addition to the subject matter generally similar to that of Claim 1, that low-level feature extraction results in a feature stream with a narrower bandwidth than the corresponding image stream. Steps performed by the remote server were removed from Claim 32.
- Claim 34 (which depends from Claim 32) includes limitations related to the remote server steps similar to those removed from claim 32.
- New method Claim 62 and new system Claim 65 have been added and are independent claims relating to server functionality (Claim 62) and configuration (Claim 65) for use in performing event detection and object tracking in image streams via distributed image processing algorithms with a remote set of image acquisition devices.
- Also added are new dependent Claims 63-64 and 66-67 relating to a computer program and being respectively dependent on Claims 62 and 65.

New Claims 62-66

New claim 62 is directed to a method of performing event detection and object tracking in image streams and is believed to be patentable over the references of record for reasons similar to those discussed hereinabove.

New claim 63 is directed to a computer readable medium for use in performing event detection and extraction and object tracking in image streams and is believed to be patentable over the references of record for reasons similar to those discussed hereinabove.

New claim 64 is directed to a system for performing event detection and object tracking in image streams and is believed to be patentable over the references of record for reasons similar to those discussed hereinabove.

New claim 65 and 66 are directed to computer code, which may be embedded in a computer readable medium, for performing event detection and object tracking in image streams and is believed to be patentable over the references of record for reasons similar to those discussed hereinabove.

Claim Rejections Under 35 U.S.C. § 103

In one or more embodiments, the present invention is directed to performing real time event detection in an area of interest by utilizing a server-based system (see e.g., par. 0046 and par. 0069 of the published application) for carrying out distributed processing using a local processor associated with a camera installed at the area of interest and a server processor connected to the local processor via a network. As specifically described in the Subject Application (see e.g., par. 0047 of the published application), the invented technique is based on distribution of image processing between encoders located in field (i.e. in the vicinity of a camera) performing low-level feature extraction and a remote central server performing high-level processing that collects and analyzes those features (see e.g., par. 0048 of the published application).

As described in paragraphs 0056 and 0057 of the Subject Application as published, in an embodiment an image frame is analyzed at the local processor (low-level processing) and the results of this processing include either identifying the frame as possibly containing an event in which case the respective feature stream is transferred to the server for further processing (high-level processing) or identifying the frame as not containing an event in which case the frame is dropped and no further processing is performed; the final decision leading to an alarm signal generated by the server.

One of the goals of one or more embodiments of the invention is reducing the bandwidth of data transmitted from multiple local processors through the network (see e.g., par. 0048 of the published application). The positive effects of the invented technique are clearly exemplified in the present application (see e.g., par. 0058 and par. 0059 of the published application); in one or more embodiments, the invention is capable of providing at least 100 times reduction of the bandwidth for the single local processor output, and 50 times reduction of the total required bandwidth for 1000 local processors, as compared to the conventional technique.

Thus, the system of the invention has a novel architecture, where multiple encoders of multiples cameras are all connectable to and operable by a common server. The encoders perform pre-processing of image data of the cameras respectively (this being a low-level feature extraction) and transmit the results to the server for post-processing (high level processing). All the encoders are operable by the server to perform said pre-processing based on instructions/data from the server.

Conversely, the system of Bolle is formed by a field agent and a corresponding office agent associated with a human expert (see for example paragraphs 0066, 0067, 0069, and 0103 of Bolle). The field agent includes a camera and an encoder. The encoder performs data compressing and encoding, and transmits the same to the office agent, which performs image data reconstruction and presentation for the human expert, who executes the event detection. Bolle is silent about any system architecture in which multiple encoders of multiples cameras are all connectable to a common office agent. Moreover, Bolle does not disclose any image processing, decision making, or further instruction generation at the office agent computer; but rather the decompression of the received data to display the corresponding image.

The system of Lipton is formed by multiple cameras connected to a server. No processing is conducted at the camera side and no instruction for any processing is generated at the server side to the camera side.

Regarding the combination of Bolle and Lipton, we provide the following:

The use of a server processor is not motivated by the description in Bolle. Indeed, Bolle is focused on the transmission of a sufficient data stream to be presented to the human expert.

The use of Lipton's server in the system of Bolle, even if intentionally implemented, would not, as is, result in the invention claimed in the Subject Application. Indeed, such a combination, as is, would result in replacing a human expert in a system (field agent - office agent - human expert) by a server processor.

Thus, Bolle and Lipton, would unavoidably need further modifications of the techniques of both Bolle and Lipton and a new motivation to arrive at the present invention.

Accordingly, Applicants submit that the combination of Bolle and Lipton does not disclose or suggest the invention claimed in the Subject Application.

Conclusion

Applicants respectfully submit that claims 1, 2, 4-6, 8-11, 13-24, 26, 27, 30-47, 49-55, and 57-61 are in condition for allowance. Accordingly, reconsideration of the present rejections and passage to allowance of claims 1, 2, 4-6, 8-11, 13-24, 26, 27, 30-47, 49-55, and 57-61 at an early date are earnestly solicited.

If the Examiner is of the opinion that the instant application is in condition for disposition other than allowance, the Examiner is respectfully requested to contact Applicant's Attorney at the telephone number listed below. If any

anticipation or obviousness rejections are contemplated by the Examiner, applicants wish to schedule an in-person interview for consideration of the grounds for such rejection at that time.

Respectfully Submitted

/Richard W. James/
Richard W. James
Registration No. 43,690
Attorney for Applicants

Spilman Thomas & Battle
One Oxford Centre, Suite 3440
301 Grant Street
Pittsburgh, Pa 15219
T (412) 325-3309
F (412) 325-3324
rjames@spilmanlaw.com